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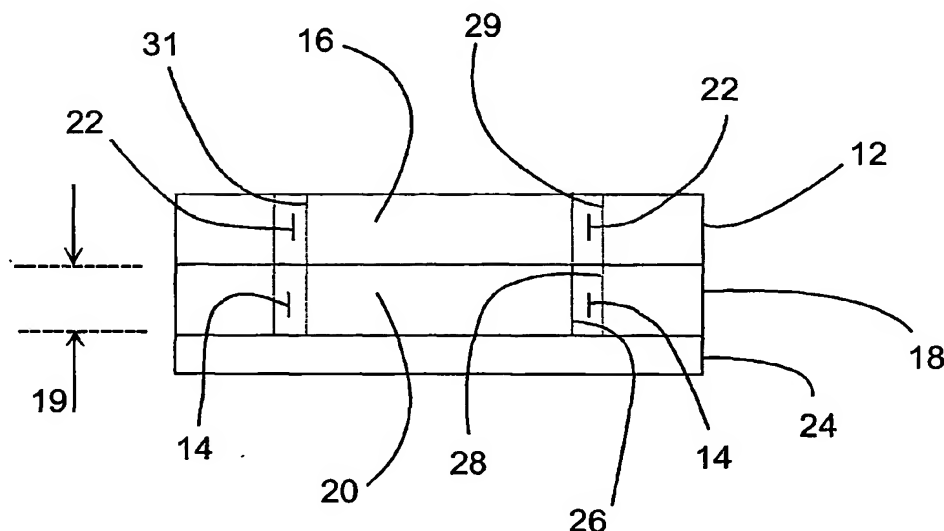
(43) International Publication Date  
21 July 2005 (21.07.2005)

PCT

(10) International Publication Number  
**WO 2005/066342 A1**

- (51) International Patent Classification<sup>7</sup>: C12N 13/00, C12M 1/00 (74) Agent: TOWNSEND, Marvin, S.; 8 Grovepoint Court, Rockville, MD 20854 (US).
- (21) International Application Number: PCT/US2003/035982 (81) Designated States (*national*): AU, CA, CN, JP, KR, US.
- (22) International Filing Date: 1 December 2003 (01.12.2003) (84) Designated States (*regional*): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).
- (25) Filing Language: English
- (26) Publication Language: English
- Published:  
— with international search report
- (71) Applicant and  
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- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: NON-UNIFORM ELECTRIC FIELD CHAMBER FOR CELL FUSION



(57) Abstract: An apparatus is provided for carrying out fusion of biological cells (10) and includes a base member (24) on which a conductive outer electrode (18) is supported and has an outer electrode radius ( $r_2$ ) and has an electrode height (19). A conductive inner electrode (20) is supported on the base member (24) and has an inner electrode radius ( $r_1$ ) and also has the electrode height (19). The outer and inner electrodes (18, 20) are spaced apart from each other by a gap which defines a fusion chamber (14). The inner electrode radius ( $r_1$ ), the outer electrode radius ( $r_2$ ), and the gap are selected in accordance with a predetermined range of selectable ratios ( $r_1/r_2$ ) in a range from 0.7 to 0.9, wherein a selected gap is limited by the range of selectable ratios ( $r_1/r_2$ ), and wherein a determined ratio ( $r_1/r_2$ ) among the selectable ratios is based on the selected gap, such that compression between the biological cells (10) and permeability between cell membranes are maximized and temperature rise is minimized for providing cell fusion in the fusion chamber (14).